Date: Sun, 26 Sep 93 04:30:18 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #56
To: Ham-Homebrew

Ham-Homebrew Digest Sun, 26 Sep 93 Volume 93 : Issue 56

Today's Topics:

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: 25 Sep 93 18:11:13 GMT
From: sdd.hp.com!hpscit.sc.hp.com!rkarlqu@hplabs.hpl.hp.com
Subject: Anyone interested in discussing PLL synt
To: ham-homebrew@ucsd.edu

>2. Has anyone else done any work with phase-locking SAW oscillators?
>What kind of tuning range have you been able to achieve?
>
>   / \/ / /   Raymond E. Anderson   WB6TPU

I designed the phase locked 640 MHz. SAW oscillator in the HP 5071A
Primary Frequency Standard. We routinely get 500 PPM of tuning range
(i.e. 320 kHz.) in production. I've seen some approach 1000 PPM.
I have been able to modify them on the bench to get as much as 1500 PPM.
Of course, we don't really need this much tuning range since our

frequency is always within 1 part in 10   :-)

Rick N6RK
rkarlqu@scd.hp.com

Date: 25 Sep 93 18:03:42 GMT
From: ogicse!hp-cv!sdd.hp.com!col.hp.com!news.dtc.hp.com!hpscit.sc.hp.com!
rkarlqu@network.ucsd.edu
Subject: Anyone interested in discussing PLL synt
To: ham-homebrew@ucsd.edu

>
>A good way to avoid this and still realize your goal is to
>build a 2m synthesizer. >Yup; run a VCO at the desired operating
>frequency. Then, use a prescaler to >divide it by 12. This way,
>using the Motorola MC145170, you can build a single
>loop synthesizer which directly generates the
i>required VHF signal using a 5KHz
>reference and no heterodyne oscillators.
>
>The output of the divide-by-12 circuit would be
>the VFO input. The radio, I assume,
>would phase modulate this without any problem.
>
> * Dana H. Myers KK6JQ, DoD 466 | Views expressed here are
     *

Well, this is certainly better than having an 833 Hz. reference frequency, but
it will still give mediocre performance. Poor phase noise, poor microphonics,
high power supply sensitivity. You really need to do the synthesis at a low
frequency (around 10 MHz.) and then upconvert to VHF with a mixer using a
crystal oscillator for an LO. Then divide by 12 or whatever.

Rick N6RK
rkarlqu@scd.hp.com

Date: Fri, 24 Sep 93 19:09:12 GMT
From: mercury.hsi.com!a3bee2.radnet.com!cyphyn!randy@uunet.uu.net
Subject: Project 8: 1 1/2 watts on 80M CW
To: ham-homebrew@ucsd.edu

jherman@uhunix3.uhcc.Hawaii.Edu (Jeff Herman) writes:
:   Can you all stand one more 80M xmtr? (Do you get the feeling that I'm trying
: to push for more 80M activity? I really love that band!)

You and me both

: 1 1/2 watts should be real fun - not quite the challenge as the 25 mw xmtr.
:
 (Probably only the r.r.a.homebrew folks
: will be interested in them, but you QRP mailgroup folks might have a use
: for them also.)
:
: Jeff NH6IL (ex: WA6QIJ)

I gave myself and those I QSO'd a shock by contacting them on a lashed up VFO'd 35mw xmit on 40mtrs...so I know what it's like.

Also tried a whole bunch of 1 and 2 transistor, to 4 transistor Xmits, using 3700kc and 3686.4 KC crystals from Digikey (price was right) and plans to use the clock-chips for 3686.4 and 28,332kc are 'in the works'

Having recently not been able to get any more crystals from W0LPS (FT 243s) I'm not able to complete a #26 triode tube tx...good for 200mw or so....

I'll have to use a 6CL6 osc (very light drive to the crystal..330k grid res) which then drives whatever tube for the out put...or by itself for 150 mw, and use those low-drive Digikey crystals, or Jan crystals (also low drive).

What? Tubes?   Tube people hate transistors, so 'they' say, so how come I speak of transistors?   (I do so in private!)

I'm not against transistors ....here's a list of ones I like:

(voltage is max safe B+...current is max safe tune up value I'd use)
(Lower B+, down to 5v is of course usable)

Ok up to 10mtrs

2N3904 or 2N2222(T0-92)--oscillator and GP amp(rf af) 12v 7ma median.
2N2222a (TO-18 or TO-5 or TO-39 bodies preferred) 12v 50ma
2N3053 (TO-5)   9v 50ma
2sc2314 (TO-220 like)   12v 100ma
2cs2166 (" ")   12v 330ma
2sc1969 (" ")   6v 700ma 12v 330ma

Ok for up to 145mc

2N3904 ---8 or 16mc osc or multiplier & amp   12v   7ma median.
2N3866 (TO-5 or 39 can)   24v 50ma 12v 50ma
2N4427 ("   " ")   12v 100ma

The last 2 above & 2sc--- ones are at RF parts, San Marcos , Calif. and
will need heat sink fin, if run as high as shown.

'median' ... 3 to 15 ma

 How does one subscribe to the mailing list for the QRP group?

Randy, KA1UNW   randy@192.153.4.200

--
Randy KA1UNW   If you get a shock while
                        servicing your equipment,   "Works for me!"
randy@192.153.4.200   DON'T JUMP!   -Peter Keyes
                     You might break an expensive tube!

Date: Sat, 25 Sep 1993 18:19:29 GMT
From: news.cerf.net!pagesat!indirect.com!indirect.com!kg7bk@network.ucsd.edu
Subject: Ramsey FX-440
To: ham-homebrew@ucsd.edu

Please give me a couple of weeks to organize my data on the FX-440.
I want to make some additional measurements... thanks, Cecil

kg7bk@indirect.com

Date: Fri, 24 Sep 1993 18:54:15 GMT
From: swrinde!cs.utexas.edu!usc!howland.reston.ans.net!spool.mu.edu!olivea!
news.bu.edu!inmet!cobra!bwhite@network.ucsd.edu
Subject: Surplus stores in the Boston area
To: ham-homebrew@ucsd.edu

Does anybody know of electronics surplus stores in the Boston
area? I know of one in Manchester NH, but I was hoping to find
one closer to home. I know of Eli's in Cambridge, but they seem
to have mostly old, dead test equipment. I am looking more for
components.

Date: Fri, 24 Sep 1993 16:16:50 GMT
From: swrinde!cs.utexas.edu!asuvax!chnews!ornews.intel.com!percy!frye!

johnb@network.ucsd.edu
Subject: What kits would you like to see?
To: ham-homebrew@ucsd.edu

In article <1993Sep22.224844.26303@btree.uucp> hale@btree.uucp (Bob Hale) writes:
>In article <27lksv$99@usenet.INS.CWRU.Edu> aa570@cleveland.Freenet.Edu (Jim Cole)
writes:
>>Sorry, to shoot you down Randy, but there is no clear and definite way
>>to detect commericals. Each network and cable company has varying
>>technical people and delivery of the signal is almost allways different.
>
>
>Sure there is. Pattern recognition.

 I worked for a company called VIDICRAFT when I was 18 that made several
 products such as commercial cutters that would pause a vcr when a commercial
 was detected.The company is still around and still sells some of these exact
 products I'm am refering to.The problem was never detection of the commercial
 that was the easy part compared to interfacing with all the various vcr
 manufactures. Each vcr man. had it's own standard on how much to rewind
 the tape when pause was pushed after a commercial was detected.
I believe the company worked out the bugs in the products because I saw
some of their products in a local store a few years back.

--
John C. Burwell - Frye Electronics \   A boy asked his mom what a republican
Views expressed are not those of   \   is, she said "it's someone who
Frye Electronics, Tigard, Oregon   \   doesn't like to share!"

Date: 24 Sep 1993 17:20:52 GMT
From: library.ucla.edu!europa.eng.gtefsd.com!howland.reston.ans.net!spool.mu.edu!
olivea!koriel!newscast.West.Sun.COM!sunspot!myers@network.ucsd.edu
Subject: Where do you get a 2N269? (was: Project 8: 1 1/2 watts on 80M CW)
To: ham-homebrew@ucsd.edu

In article DBz@news.Hawaii.Edu, jherman@uhunix3.uhcc.Hawaii.Edu (Jeff Herman)
writes:

>Parts List
>
>Q1, Q2 2N269 transistor

Where did you find these transistors? The number is extremely old, and
I don't know where to find them.

---

 * Dana H. Myers KK6JQ, DoD 466 | Views expressed here are
    *
 * (310) 348-6043 | mine and do not necessarily   *
 * Dana.Myers@West.Sun.Com | reflect those of my employer
    *
 * This Extra supports the abolition of the 13 and 20 WPM tests *

Date: 24 Sep 1993 17:38:54 GMT
From: swrinde!elroy.jpl.nasa.gov!usc!howland.reston.ans.net!europa.eng.gtefsd.com!
avdms8.msfc.nasa.gov!news.larc.nasa.gov!grissom.larc.nasa.gov!
kludge@network.ucsd.edu
Subject: Where do you get a 2N269? (was: Project 8: 1 1/2 watts on 80M CW)
To: ham-homebrew@ucsd.edu

In article <27va9k$1ev@newscast.West.Sun.COM> myers@cypress.West.Sun.COM writes:
>In article DBz@news.Hawaii.Edu, jherman@uhunix3.uhcc.Hawaii.Edu (Jeff Herman)
writes:
>
>>Parts List
>>
>>Q1, Q2 2N269 transistor
>
>Where did you find these transistors? The number is extremely old, and
>I don't know where to find them.

Cain Electronics in Hampton, VA. has a pile of old germanium transistors
sitting in their back room. I think you'd be better off just dropping a
generic silicon transistor in there, though...
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

Date: 25 Sep 1993 17:56:53 GMT
From: elroy.jpl.nasa.gov!sdd.hp.com!col.hp.com!news.dtc.hp.com!hpscit.sc.hp.com!
rkarlqu@ames.arpa
To: ham-homebrew@ucsd.edu

References <27mlp6$934@vuokko.uta.fi>, <1993Sep21.164140.6445@ica.philips.nl>,
<27pd00$ah9@vuokko.uta.fi>
Subject : Re: Wide-band PLL's (was: discussing PLL synthesis)

>> I would like to join, just now I am planning a 100 to 200MHz VCO
>>with binary band switching, and have done small computer program

>Be careful. First off, I don't think you are able to do that in one
>oscillator, but if you do, you will still have other problems.

Actually, that is quite doable. I had a 100 to 300 MHz. VCO in production when I worked for Lucas Zeta Labs 15 years ago. We also had 10 to 20 MHz, 50 to 150 MHz. and 500 to 1200 MHz. VCOs in production. Never had much trouble with them. And their phase noise was the same as narrow band VCOs. (We weren't however working in the lunatic fringe of phase noise such as the HP8662, where you wouldn't want to do this).

>Also, if you use varicaps, much of the capacity in your oscillator
>will be from these varicaps, which have a low Q and thus will degrade
>the performance of your oscillator.

>Geert Jan

"Silicon capacitors" (i.e. varicaps) can actually have very respectable Qs, frequently better than fixed capcitors and almost always better than the inductor they resonate with.

>Have anyone experienced with strip-line inductors on PCB-board, what the
>Q could be on glass-epoxy boards ?.
>And size of 80 nH inductor ?.
>
>Kari

Using a shorted piece of semi-rigid coax to make an inductor is a bad idea; you'll be lucky to get a Q of 30, which any molded inductor will beat. Using a strip-line (I think you really mean "micro-strip") inductor on a PC board is a *very* bad idea because the additional losses of the epoxy will lower the Q to about 10. (Epoxy is *very* lossy above 50 MHz.). On the other hand, you can go to Toko or Coilcraft and get a nice air core coil with a Q way over 100.

Instead of a micro-strip inductor, use a "printed inductor", consisting of arcs on *both* sides of the board (same pattern) but with *no* ground plane. Connect them together in several places with plated thru holes (or "z" wires). This is good if you need a very low value of inductance for your VCO. It can be shown that phase noise is proportional to inductance in typical VCOs. I picked up 10 dB. improvement in phase noise once by replacing a Toko airwound coil

with a much lower inductance printed inductor.

Rick N6RK
rkarlqu@scd.hp.com

Date: 25 Sep 1993 18:16:35 GMT
From: saimiri.primate.wisc.edu!sdd.hp.com!col.hp.com!news.dtc.hp.com!
hpscit.sc.hp.com!rkarlqu@ames.arpa
To: ham-homebrew@ucsd.edu

References <27knh1$8f6@male.EBay.Sun.COM>, <27kqqk$j3p@newscast.West.Sun.COM>,
<27l7tg$9fu@cc.tut.fi>cit.sc
Subject : Re: Anyone interested in discussing PLL synt

In article <27l7tg$9fu@cc.tut.fi>,
Kein{nen Paul <k23690@lehtori.cc.tut.fi> wrote:
>
>As a related topic, which is the correct way to design a Cauer loop
>filter ? Some sources say that the notch should be at the reference
>frequency. This looks strange to me, as a quadrature phase detector
>produces during lock a DC-component (loop control voltage) and
>_twice_ the reference frequency.
>
>Are there other filter designs that filter out the reference components
>without affecting too much the loop bandwidth in order to reduce the
>phase noise and eliminate the microphonics in a VCO ?
>
>   Paul OH3LWR

I did a fair amount of study of filters for eliminate PLL reference
sidebands, and concluded that indeed the Cauer (elliptic function)
filter is the optimum filter.
It has worked miracles in all loops I tried it in. What you should do is
use a 5th or 7th order filter so you can put notches at *both* the
reference frequency and twice the reference frequency. This is doable
because you don't really care what the ripple spec on the filter is.

Rick N6RK
rkarlqu@scd.hp.com

End of Ham-Homebrew Digest V93 #56
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